C1 antibody e-23 was raised against an epitope on the 185 kD antigen p185HER-2/neu found on the surface of breast and ovarian carcinomas. The 12 amino acid 212 linker was chosen to tether the two variable regions of the antibody since this sequence was shown to provide for proteolytic stability and functional antibody in several instances. The resulting scfv-23 single chain antibody is encoded by plasmid 23-3825 and is available as ATCC Patent Deposit Designation PTA-2845. Alternately other linker sequences such as the flexible Gly-rich peptide, linking peptides from multidomain proteins, or other designed peptides e.g. the 202, 202', 205, and 218 could have been selected. In addition a functional linker could have been selected from a randomized sequence library using phage display technology or a colony filter-lift hapten-binding assay. Furthermore, short linker sequences used in the construction of diabodies could also have been chosen. Antibodies recognizing tumor cell-surface epitopes have the ability to selectively localize within human tumors after systemic administration and therefore can serve as targeting probes for the site-specific delivery of cytotoxic chemotherapeutic agents such as Pseudomonas exotoxin, ricin or gelonin. An immunotoxin was constructed with sFv-23 and gelonin. In addition, with a view to